

REMARKS/ARGUMENTS

Introduction:

Claim 36 is amended, and claims 90-100 are newly added. Claims 36-58 and 60-100 are now pending in the application. (Claims 1-35 and 59 were previously canceled.) Applicants respectfully request reexamination and reconsideration of the application.

Rejection based on 35 USC § 112:

Claim 36 was rejected under 35 USC § 112, 2nd paragraph on the grounds that claim 36 allegedly does not claim what Applicants regard as their invention. Although claim 36 has been amended to remove the recitations regarding pressure and the contactor being flexible, those recitations have been retained in new dependent claim 100. Indeed, the recitations regarding pressure and the contactor being flexible were removed from claim 36 not for reasons of patentability but because Applicants believe that such recitations are not needed to distinguish claim 36 over the prior art of record. Applicants traverse the rejection of claim 36, particularly as that rejection might be applied to new claim 100.

The grounds for rejecting claim 36 are that the specification allegedly contradicts vertical movement of the contactor towards the wafer. Initially, Applicants note that, although neither claim 36 nor claim 100 is limited to vertical movement of the contactor towards the wafer, both claim 36 and claim 100 are sufficiently broad in scope to encompass such movement. In rejecting claim 36, the Patent and Trademark Office ("PTO") identified an exemplary embodiment or configuration described in paragraph [0022] in which a wafer 1012 can be moved into contact with a wafer contactor 1010. The PTO does not appear, however, to have considered whether other embodiments or configurations disclosed in the specification allow for other movements, such as movement of a contactor toward a wafer. In fact, the specification discloses multiple such embodiments or configurations. For example, paragraph [0060] of the specification describes Figure 9a as follows:

"The wafer on which the devices 1504 and 1502 are disposed is brought to bear against the substrate 1510, *or vice-versa*, so that each of the contact pads 1512 effects a pressure connection with a corresponding one of the resilient contact elements 1508. Similarly, the wafer contactor 1532 is brought to bear against the substrate 1510, *or vice-versa*, so that each of the contact pads 1534 effects a pressure connection with a corresponding one of the resilient contact elements 1536." (Paragraph [0060] (emphasis added).)

The foregoing makes clear that Applicants did not intend the invention to be limited to movement of a wafer into contact with a contactor. Rather, Applicants intended their invention to include any of many possible movements that could bring a wafer or other electronic device to be tested and a contactor into contact one with another, including without limitation movement of the wafer or electronic device, movement of the contactor, or movement of both the wafer or electronic device and the contactor.

As another example, Figures 15 and 16 and paragraph [0078] of the specification disclose an exemplary embodiment or configuration of the specification in which pressure 1916 applied to a flexible wiring substrate 1910 can bring about electrical connections between contact elements 1902 of an interposer 1900 and terminals 1910 of the wiring substrate 1910 and other contact elements 1904 of the interposer 1900 and pads 1912 of a wafer 1906 to be tested.

Because the specification expressly discloses multiple exemplary embodiments or configurations in which a contactor can move toward a wafer, there is simply no basis for an assertion that Applicants somehow do not regard as their invention a claim that is sufficiently broad to encompass a contactor that can move toward a wafer. The rejection of claim 36 under 35 USC § 112, 2nd paragraph should therefore be withdrawn.

Claims 36-57, 75, 79, 80, 82, and 98-100:

Claims 36, 39-57, and 75 were rejected under 35 USC § 103(a) as obvious in view of US Patent No. 5,974,662 to Eldridge et al. ("Eldridge I") and US Patent No. 5,703,494 to Sano ("Sano"). In addition, claims 37, 38, 42, 49, and 50 were rejected in view of Eldridge and Sano in combination with one of the following references: US Patent No. 6,184,053 to Eldridge et al. ("Eldridge II"); US Patent No. 6,064,213 to Khandros et al. ("Khandros"); Brozowski et al., "Electronic Packaging & Interconnection Handbook" (McGraw-Hill 1997), pg. 8-5 ("Brozowski"); and/or US Patent No. 5,791,914 to Loranger et al. ("Loranger"). Applicants respectfully traverse these rejections.

Independent claim 36 now recites that the interposer comprises "a substrate that is a single block structure." Claim 36 further recites that a "first plurality of elongate, resilient contact elements [extend] from a first side of said single block structure" and align "with ones of . . . [a] first plurality of terminals" on a contactor, and "a second plurality of elongate, resilient contact

elements extend from a second side of said single block structure." Claim 36 further states that the "second plurality of contact elements are disposed in a pattern that corresponds to a pattern of . . . terminals on" an electronic device to be tested. Ones of the "second plurality of contact elements are configured to directly contact and thereby make electrically connections with said ones of said second terminals" on the electronic device to be tested.

In rejecting claim 36, the PTO relied on Figure 5 of Eldridge I, equating Eldridge I's probe card 502 with the contactor of claim 36; Eldridge I's interposer 504 with the substrate of claim 36; Eldridge I's interconnection elements 514 with the first plurality of contact elements in claim 36; and Eldridge I's interconnection elements 516 with the second plurality of contact elements in claim 36. In Figure 5 of Eldridge I, interconnect elements 524—not interconnection elements 516 (which as discussed above, the PTO equated with the second contact elements of claim 36—are disposed and configured to contact terminals 526 on Eldridge I's electronic device to be tested 508. Thus, the specific Figure—Figure 5—relied on by the PTO does not show "ones of said second plurality of contact elements . . . disposed in a pattern that corresponds to a pattern of ones of a plurality of second terminals on said electronic device, and said ones of said second plurality of contact elements . . . configured to directly contact and thereby make electrically connections with said ones of said second terminals" as recited in claim 36.

Moreover, the test apparatus of claim 36 has, in essence, eliminated the space transformer 506 of Eldridge I while retaining basic functionality of the space transformer 506 of Eldridge I. As stated in the MPEP, "the omission of an element and retention of its function is an indicia of unobviousness." (MPEP § 2144.04.)

At least for the foregoing reasons, independent claim 36 is patentable over Eldridge I.

None of Sano, Eldridge II, Khandros, Brozowski, or Loranger was relied on as teaching or suggesting "ones of said second plurality of contact elements are disposed in a pattern that corresponds to a pattern of ones of a plurality of second terminals on said electronic device, and said ones of said second plurality of contact elements are configured to directly contact and thereby make electrically connections with said ones of said second terminals." Therefore, independent claim 36, as well as claims 37-57, 75, 80, 82, and 98-100 (which depend from claim 36), are patentable over Eldridge I alone or in combination with any one or more of Sano, Eldridge II, Khandros, Brozowski, or Loranger.

Claims 58, 60-74, 76-78, 81, 83, and 93-97:

Claims 58, 60-74, and 76-78, were rejected under 35 USC § 102(b) as anticipated by Eldridge I, and claims 58, 76-78, and 81, were rejected as anticipated by US Patent No. 6,215,320 to Parrish ("Parrish"). In addition, claims 60 and 63 were rejected under 35 USC § 103(a) as obvious in view of Eldridge I in combination with one or more of Eldridge II, Brozowski, and/or Loranger. Applicants respectfully traverse these rejections.

Independent claim 58 recites "means for attaching said interposer to said contactor such that at least one of said contactor or said interposer is moveable between a first position and a second position while said interposer is attached to said contactor." Claim 58 further recites that "in said first position, said first plurality of contact elements do not contact said first terminals on said contactor, and in said second position, said first plurality of contact elements contact said first terminals on said contactor and said first plurality of contact elements and said second plurality of contact elements provide electrical connections from said first terminals on said contactor to a second plurality of terminals on said electronic device."

In rejecting claim 58 in view of Eldridge I, the PTO did not identify an element disclosed in Eldridge I that meets the "means for attaching" element of claim 58. In rejecting claim 58 in view of Parrish, the PTO equated Parrish's three-point planarizer 34 with the "means for attaching" of claim 58. The PTO did not, however, cite a teaching or passage in Parrish describing the three-point planarizer 34 as performing any of the functions recited in claim 58 as performed by the "means for attaching." The PTO has thus not shown that the three-point planarizer 34 performs any of the functions recited in claim 58 as performed by the "means for attaching." Indeed, the PTO has not shown that the three-point planarizer 34 is designed to or capable of even attaching the interposer 36 to the probe card 30, and thus the PTO has not shown that the three-point planarizer 34 performs even the basic function of "attaching" the interposer to the contactor. Indeed, Parrish's three-point planarizer 34 appears to be nothing more than a screw configured to press against a ball the presses against but is not attached to the pin interface 32. Parrish's three-point planarizer 34 therefore appears to be capable of nothing more than pushing the pin interface 32 away from the probe card 30 but is not capable of attaching the pin interface 32 or the interposer 36 to the probe card 30. The PTO has thus not shown that Parrish anticipates claim 58, and the rejection of claim 58 should therefore be withdrawn.

Applicants note that even if Parrish's three-point planarizer 34 is capable of making slight adjustments to the tilt of the pin interface 32 with respect to the probe card 30, there is no indication that the three-point planarizer 34 is capable of moving the pin interface 32 sufficiently to disengage contact between the interposer 36 and the probe card 30 while the interposer 36 remains attached to the probe card 30. Indeed, the purpose of the three-point planarizer 34 would appear to be to make slight adjustments of the position of the pin interface 32 with respect to the probe card 30—and thus to adjust the tilt of the pin interface 32 with respect to the probe card 30—while contact between the interposer 36 and the probe card 30 is maintained. Thus, the three-point planarizer 34 not only appears incapable of attaching the interposer 36 (or the pin interface 32) to the probe card 30, but the three-point planarizer 34 appears to be incapable of moving (e.g., adjusting the tilt of) the pin interface 32 sufficiently to disengage contact between the interposer 36 and the probe card 30 while the interposer 36 is attached to the probe card 30.

For at least the foregoing reasons, claim 58 patentably distinguishes over Eldridge I and Parrish.

None of Eldridge II, Brozowski, or Loranger was relied on as teaching or suggesting the "means for attaching" of claim 58. Therefore, independent claim 58, as well as claims 60-74, 76-78, 81, 83, and 93-97 (which depend from claim 36), are patentable over Parrish and Eldridge I and Eldridge I alone or in combination with any one or more of Eldridge II, Brozowski, or Loranger.

Claims 84-92:

Claims 84-89 were rejected under 35 USC § 102(b) as anticipated by Eldridge I and Parrish. Applicants respectfully traverse these rejections.

Independent claim 84 recites "application of a pressure *directly* to said first substrate causes ones of said second plurality of elongate, resilient contact elements to contact corresponding ones of said contact points on said electronic device to be tested." The PTO has not cited a teaching or passage in Eldridge I or Parrish that teaches or suggests the foregoing. At least for this reason, independent claim 84 is patentable over Eldridge I and Parrish.

Claims 85-92 depend from claim 84, and at least because of this dependency, are also patentable over Eldridge I and Parrish.

Conclusion:

In view of the foregoing, Applicants submit that all of the claims patentably distinguish over the prior art and are in condition for allowance. Therefore, the rejections of the claims should be withdrawn and the application should be passed to allowance. If the Examiner believes that a discussion with Applicants' attorney would be helpful, the Examiner is invited to contact the undersigned at (801) 323-5934.

Respectfully submitted,

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